

serpent of any kind) lying on the bank a few yards down the line." I went to the place indicated, and there was a very large viper basking in the sun, but when I got near, it began to move away, and to prevent its escape I gently pressed a stick across it while I sent the man to fetch a glass jar to secure it in; but when it found its progress arrested, it began in a very spiteful manner to dart its nose forward, striking at the stick and stones and anything that was within its reach, but I could not see that it opened its mouth to make a real bite; but when it found with all its wriggling and twisting it was unable to free itself, it turned its head round upon itself, and about four inches from the head it opened its jaws and gave itself a bite, and when the fangs were well into the skin, it gave an extra squeeze, as if it intended to make sure that the operation should be thoroughly and effectively performed. It then deliberately withdrew its fangs, and in so doing it turned its head first one way and then the other, so as to withdraw one fang at a time.

Its head then went forward, and its body and tail became straight, and there lay the viper apparently lifeless, but I noticed a slight tremor in the skin and scales, which gradually passed from the head to the end of the tail. I took it up with my hand and placed it in the glass jar, and stood the jar in the window where the rays of the sun were hot, and in twenty five minutes the viper began to show signs of life, and in an hour it was as lively as if nothing had happened.

I should be glad to know whether it has come to the knowledge of any of the readers of NATURE that any human being or any animal has died from the bite of a viper. In my boyhood I have known sheep being bitten in the under jaw near the lip, and the animal's head has swollen very large, but invariably the sheep were well again when seen early on the following morning.

Some twenty years ago I saw a man who had been bitten in the hand by a viper, and his arm swelled and turned purple in places, and he was sick and faint for some hours, but he told me he was as well twenty-four hours after the bite as he was before.

R. LANGDON

Silverton Station, Cullumpton, Devon, July 28

A Cat and a Chicken

THE account I extract below was given in a local paper dated May 30 last:—

"*Strange Attachment.*—A curious instance of the above was brought to our knowledge by Mr. Hibbs, of the 'White House,' Swanage. A hen sitting on thirteen eggs hatched out twelve chickens on the 15th inst., but during her sitting four stray eggs had been laid in her nest, and as the eggs had not been marked these could not be removed. The hen with her little brood were not taken from the nest till two days later, when one of the stray eggs was found to be just bursting its shell. Mrs. Hibbs, in trying to assist the little stranger by removing the shell, somewhat injured it, and thinking it would die, and not liking to kill it herself, she thought that her cat (which happened to have a kitten a few days' old) would make short work of it. Strange to say the cat commenced to remove all the shell from the hatching chick, and then to shelter it with her kitten; since which she has carefully looked after it, and it is certainly a pleasing and unusual sight to see the little chick nestling between the forepaws of its foster mother with the kitten in close proximity. Mr. Hibbs tried to put the chicken with the rest of the brood, but the cat was so uneasy until the chicken was restored to her, that Mr. Hibbs has decided to let her have her own way, and bring them up together."

I kept the paper by me, intending, if I could verify the incident, to send the report of it to you. But under pressure of other writing it was not till a week ago that I addressed a letter to Mr. Hibbs. Last night I received from Mr. James Andrews of Swanage the following reply:—

"Faircross, Wyke Regis, Weymouth, July 24, 1883

"DEAR SIR,—David Hibbs of Swanage has forwarded me your letter of the 19th inst., asking me to reply to it. This he has done, I presume, as I had put his paragraph to the paper a little into 'shipshape' for him

"I am a resident at Swanage, and the bank manager there, and can vouch for the details of the 'Strange Attachment' just as recorded. I went round at Hibbs's request when the chicken was four days old. The old cat was lying down—the kitten asleep—and the little chick nestling with the cat, who would lift up her foreleg whenever the chick came near, to allow the chick

to nestle under its arm, when it would close its arm around it in a most amusing and affectionate way, and seemed to be much more anxious about it than her own kitten. They began feeding the little chick at the first by sprinkling sop on the hair of the cat, which the chick would pick off. I do not know whether Hibbs has replied to you as well, as he did not say, but I hope the above will be sufficient.—JAMES ANDREWS."

It is to be noted that these aberrations from inherited habit—to which we have given the convenient name of instinct—occur almost invariably under the strong solvent of the maternal *στροφή*; but that they should occur at all points strongly towards the essential oneness and common origin of all life—however widely it may have deviated later along its ancestral lines of descent.

HENRY CECIL

Bregner, Bournemouth, July 25

Primæval Man and Working-Men Students

I RECEIVED a letter with great pleasure a fortnight ago from four new correspondents, who said they were working-men of Plaistow who had read my notes on Primæval Man in NATURE, had studied the Pitt-Rivers collection, and wished to show me their finds in Essex and have the North-East London position personally explained to them. Sunday having been mentioned as a convenient day, and this being approved by me, my correspondents (Messrs. W. H. Smith, Amos Herring, W. Swain, and Philip Thornhill) came here on Sunday morning, July 29. The stones brought were of great interest, mostly belonging to the Essex positions published by me. One example was a superb, rather large, wedge-shaped, pointed, slightly abraded, and ochreous implement found at Leyton; two were from Plaistow, a locality almost unrepresented in collections; one from West Ham, and other pieces from Wanstead. A somewhat small ovate specimen of great interest was found by one of my correspondents in the gravel excavated for the New Albert Dock, the extension of the Victoria Dock. The object of the greatest interest was a rude scraper-like tool made from a somewhat large piece of tabular flint, and found in gravel excavated between Loughton Railway Station and the "Robin Hood" Tavern, undoubtedly artificial and palæolithic; this ancient gravel is I think usually placed in the Glacial series; the find must be accepted as genuine. I may say here that on the 23rd of this month I found another implement and six flakes in gravel brought from Ware.

After my friends had looked over the collection here, listened to a few hints, and received a gift each of an implement from my own store in pleasant remembrance of the visit, we went to see some of the small excavations still open near Stoke Newington Common, in one of which the line of the "Palæolithic Floor" was distinctly visible, covered with about two feet of "trail and warp" and surmounted by humus. We then went into the Lea Valley, the meaning of the wide and deep excavation since palæolithic times being well understood by my visitors

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WORTHINGTON G. SMITH

A Remarkable Form of Cloud

THE peculiar cloud formation observed by Mr. Hopkins and communicated to NATURE, vol. xxviii. p. 299, was also seen by me on Sunday, July 22, at 10.35 p.m. What I saw accords almost perfectly with the description given by Mr. Hopkins; but there was one rather important exception. Starting from a little above the horizon in the north-north-west I observed the position of another arch of cloud, clearly defined, strictly parallel to the principal arch, and ending somewhat abruptly about 20° from the zenith. The main streak was separated from it by about three times its width, and the intermediate space was quite clear. Both clouds appeared comparatively dense, and were situated at a moderate elevation. I did not notice any change in their appearance, nor did I see them break up.

It seems not improbable that currents of air from the north-north-west, passing through an otherwise tranquil but vapour-laden atmosphere of a much lower temperature than the surrounding air, may have originated these streaky bands of cloud by condensing the aqueous vapour suspended along their course into definite form.

ARTHUR EBBELS

Clapham, July 31

WITH reference to Mr. Hopkins's letter in NATURE last week (p. 299), I may say that I observed the bow-like band of

cloud, and noticed that it had what I may compare to a bow-string stretched from end to end. On Thursday, July 19, from 11 to 12 p.m., the whole sky was divided by such bands converging east and west. This was noticed by many persons in Essex, where I was staying. E. C. WALLIS
31, Meadow Road, S.W.

ON MOUNTING AND PHOTOGRAPHING MICROSCOPIC OBJECTS¹

II.

THE prepared slide fixed in a clip should be placed on a hob or in a cool oven (not above 50° C.) for two days, by which time the excess of balsam round the edge of the cover will have become brittle, and can be removed with the point of a scalpel or penknife. Any balsam still remaining can be cleaned off with methylated spirit and a clean soft rag. The final cleaning of the slide may be done with soap and water. As the balsam itself serves to secure the cover to the slide, no cement or varnish is needed, and it remains only to label the object.

After successfully mounting this object, no difficulty will be experienced in applying the same methods to other small insects and parts of insects, such as antennæ, spiracles, feet, wings, ovipositors, corneas, tracheæ, &c. The two last cases, however, require careful dissection.

Animal hairs are best mounted in balsam, and the only special treatment they require is soaking for a short time in ether to remove grease.

The siliceous skeletons of diatoms and spiculæ of sponges and Holothuriæ require cleaning from extraneous matter by treatment with strong acids, but space will not allow a description of the details of their preparation.

The mounting of the organs and tissues of the higher animals and plants should not be attempted until tolerable facility has been acquired in the preparation of the simpler objects previously mentioned, as their structure is usually revealed only by the somewhat difficult process of cutting thin sections of them.

Most animal substances require hardening before they can be cut. Hardening may be thus effected. The perfectly fresh tissue is to be cut into pieces about the size of Spanish nuts, and soaked in ten times its bulk of a solution, consisting of one part of methylated spirit, and two parts of a $\frac{1}{2}$ per cent. solution of chromic acid. At the end of twenty-four hours, and again after every third day, the solution is to be changed. After a week or fortnight the pieces should be well washed in methylated spirit, and will then be hard enough for cutting.

The next process is to embed the tissue in some substance firm enough to afford it support, yet soft enough to be readily cut with it. A good material for this purpose is a mixture of three or four parts of solid paraffin (paraffin candles), three of lard, and one of paraffin oil. It should be heated just sufficiently to keep it fluid, and the hardened tissue from which the excess of alcohol has been drained should be soaked in it for a quarter of an hour if of moderately close texture. If of very open texture—lung or testis, for instance—it must be soaked for about half an hour in rectified alcohol, and for a like period in absolute alcohol, to remove all traces of water. Then after displacing the alcohol by a quarter or half an hour's immersion in oil of turpentine, the tissue may be placed in the melted wax, which being readily miscible with the turpentine, will gain access to all the interstices of the substance.

A mould must then be prepared by gumming a piece of paper round a cork or cylinder of wood, the paper being allowed to project about three-quarters of an inch. Into this mould the substance is to be put, and the space filled up with some of the melted wax. When quite cold the paper may be stripped off, and the preparation will be

ready for cutting with a razor, wetted with spirit to prevent adhesion of the sections.

The sections as they are cut are to be floated off the razor into methylated spirit, from which they may be transferred to a staining fluid.

The object of staining is in most cases not simply to impart a general colour to the object, but to take advantage of the fact that different parts are affected in different degrees by the same dye and are thereby clearly discriminated. Thus if an ammoniacal solution of carmine be employed, the structures which are first and most deeply stained are nuclei, axis cylinders of nerves, and ganglion corpuscles. To a less extent it stains the protoplasm of gland-cells and connective tissue corpuscles. But if the action be too long continued, the whole will be deeply and uniformly stained, and the selective power will be lost.

Carmine solution may be prepared by dissolving with the aid of gentle heat 2 grammes of carmine in 4 c.c. of ammonia and 48 c.c. of distilled water. Continue the heat or expose to the air until the smell of ammonia has almost disappeared, and then keep in a well-corked bottle. When required for use, a few drops of this solution should be added to a watch-glass full of water.

Logwood resembles carmine in its action and is by many preferred to it. It may be prepared as follows:—12 grammes of extract of logwood and 36 grammes of alum, both in fine powder, are to be mixed with 60 c.c. of distilled water, stirred well with a glass rod and filtered. Add to filtrate 5 c.c. rectified alcohol. Dilute with two or three times its volume of distilled water when used. When the tissue has been hardened with chromic acid, the sections should be soaked for a few minutes in a 1 per cent. solution of sodic bicarbonate to neutralise the acid before staining in logwood.

No general rule can be given for the length of time the section must remain in the staining fluid. It will vary from a few minutes to as many hours, and the section must be removed and examined with the microscope from time to time to see when the process has gone far enough.

When sufficiently stained, the excess of staining fluid is to be drained off and the section passed through rectified spirit 60 O.P., oil of cloves, and oil of turpentine, remaining about five minutes in each, and may then be mounted in balsam as already described.

For displaying tessellated epithelium in mesenteries, lungs, and blood-vessels, nothing can be more beautiful than staining by oxide of silver reduced from the nitrate. The perfectly fresh membrane or the section of hardened tissue as the case may be must be well washed with distilled water and then soaked for five minutes in a 5 per cent. solution of nitrate of silver. It is then again to be washed and exposed in distilled water to sunlight until it assumes a brown colour. The necessary exposure will vary from ten minutes to an hour or more. After a final wash in distilled water, it may be treated like objects stained by other methods. By this treatment the tissue assumes a general pale brown tint and the outline of every cell is sharply marked out by a deep brown deposit of argentic oxide in the intercellular substance.

Many vegetable tissues, such as cork, pith, succulent leaves, and some fruits, tubers, and roots, can be cut without previous preparation, and for such as are too soft to be cut in the fresh state the process of hardening is simpler than that employed for animal substances. Dehydration by simply soaking for a day or two in methylated spirit usually suffices.

Stems of plants usually require softening before cutting, and this softening can be effected if the wood is young by two or three days' immersion in methylated spirit to remove resinous matter, followed by maceration for from four days to a week in water. When the wood is old or unusually hard, the maceration must be prolonged or the

¹ Concluded from p. 303.